televic
conference

D-CERNO

Wired Conference System

Installation and User Manual

Table of Contents

Table of Contents **3**

Section 1 – General Information **5**

1. Copyright Statement **7**

2. Trademarks **8**

3. Conformity info **8**

4. Safety Instructions **8**

4.1. Important safety instructions **8**
4.2. Power Connections **11**

5. D-Cerno System Architecture **12**

5.1. System components **12**
5.2. Network structure **12**

Section 2 – System Components **15**

6. Table Top Delegate units **17**

6.1. Introduction **17**
6.2. Controls and indicators **17**
6.3. Installation **19**
6.4. Microphones **20**
6.4.1. Introduction 20
6.4.2. Electrical and acoustic properties 20

6.5. Maintenance **21**
6.5.1. General 21
6.5.2. Cleaning 21

7. Central Control unit **22**

7.1. Introduction **22**
7.2. Controls and indicators **22**
7.3. External Connections **22**

8. Power Supply **23**

9. System cables 23

Section 3 – Configuring the system 25

10. Menu Navigation 27

11. Menu overview 27

Section 4 – The Menu explained 31

12. Main Menu 33

12.1. Headphone volume 33
12.2. Conference modes 33
12.2.1. Direct Access 33
12.2.2. Activation mode 33
12.2.3. Override (1-8) 33
12.2.4. With request 34

12.3. Microphone Limit 34
12.4. Microphone preset 34
12.5. Audio out 35
12.6. Audio In 35
12.7. External processing 35
12.7.1. Independent aux settings 35
12.7.2. Remote Conferencing 35
12.7.3. External Equalizer 36

12.8. Settings menu 37
12.8.1. Factory settings 37
12.8.2. System info 37

Section 5 – Appendix 39

13. Default Settings 41

14. Technical Data 42

14.1. Electrical and Electro Acoustical Characteristics 42
14.2. Mechanical Characteristics 42
14.3. Environmental Characteristics 42
14.4. System limits 42

Section 1 – General Information

1. Copyright Statement

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3. Conformity info

The D-Cerno Wired Conference system is compliant with following standards:

- EN60065
- EN55103-1/-2
- IEC60914

4. Safety Instructions

The D-Cerno Conference system is state of the art and has been designed to meet quality. Nevertheless, the individual components of the conference system can cause danger for persons and material assets if

- the conference system is not used as intended,
- the conference system is set up by personnel not familiar with the safety regulations,
- the conference system is converted or altered incorrectly,
- the safety instructions are not observed.

4.1. Important safety instructions

1. Read Instructions

All the safety and operating instructions should be read before the product is operated.

1. Retain Instructions

The safety and operating instructions should be retained for future reference.

2. Heed Warnings

All warnings on the product and the operating instructions should be adhered to.

3. Follow Instructions

All instructions for installation or operating / use should be followed.

4. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

5. Ventilation

Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

6. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

7. Attachments

Do not use attachments not recommended by the product manufacturer as they may cause hazards.

8. Water and Moisture

Do not use this product near water or in a moistures environment - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet

basement; or near a swimming pool, in an unprotected outdoor installation; and the like.

9. Accessories

Only use attachments/accessories specified by the manufacturer. Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

10. Moving

A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

11. Power Sources

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

12. Power Lines

An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal. U.S.A. models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.

13. Grounding or Polarization

Do not defeat the safety purpose of the polarized or ground-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

14. Power-Cord Protection

Power-supply cords should be routed to that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plug, convenience receptacles, and the point where they exit from the product.

15. Lightning

For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

Not applicable when special functions are to be maintained, such as evacuation systems

16. Overloading

Do not overload wall outlets, extension cords or integral convenience receptacles as this can result in a risk of fire or electric shock.

17. Object and Liquid Entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

18. Inflammable and Explosive Substance

Avoid using this product where there are gases, and also where there are inflammable and explosive substances in the immediate vicinity.

19. Heavy Shock or Vibration

When carrying this product around, do not subject the product to heavy shock or vibration.

20. Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

21. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.

b. if liquid has been spilled, or objects have fallen into the product.

c. If the product has been exposed to rain or water.

d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.

e. If the product has been dropped or damaged in any way.

f. When the product exhibits a distinct change in performance-this indicates a need for service.

22. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

23. Safety Check

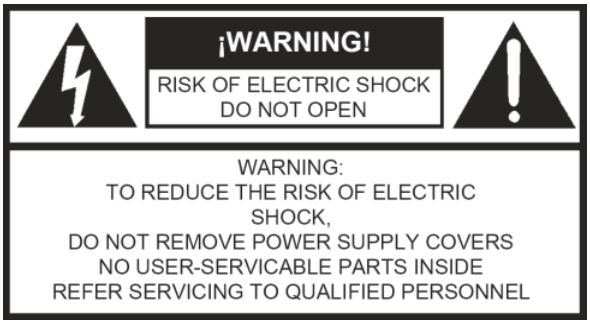
Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

24. Coax Grounding

If an outside cable system is connected to the apparatus, be sure the cable system is grounded. U.S.A. models only: Section 810 of the National Electrical Code, ANSI/NFPA No.70-1981, provides information with respect to proper grounding of the mount and supporting structure, grounding of the coax to a discharge apparatus, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

4.2. Power Connections

For permanently connected equipment, a readily accessible disconnect device shall be incorporated in the fixed wiring; For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.



This label may appear on the bottom of the apparatus due to space limitations.

The lightning flash with an arrowhead symbol, with an equilateral triangle, is intended to alert the user to the presence of un-insulated 'dangerous voltage' within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Warning:
To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture. Do not open the cabinet; refer servicing to qualified personnel only.

Warning:
To prevent electric shock, do not use this (polarized) plug with an extension cord receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attention:
Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.

Attention:
Equipment with or without ON/OFF switches have power supplied to the equipment whenever the power cord is inserted into the power source; however, the equipment is operational only when the ON/OFF switch is in the ON position. The power cord is the main power disconnect for all equipment.

5. D-Cerno System Architecture

The D-Cerno system is a digital discussion system for small to medium size conference rooms.

The main characteristics of the system are:

- Cristal clear audio reproduction: digital signal processing, high quality GSM interference free microphone and loudspeaker, resulting in excellent intelligibility.
- Attractive, stylish design: contemporary, unobtrusive and low profile, fitting into modern and traditional style conference rooms
- Plug and Play: easy installation, up and running in no time, ideal for frequently changing environments
- High reliability: built-in redundancy feature – touch sensor technology, hygienic, easy to clean, equal performance over the entire lifespan of the product.

5.1. System components

A D-Cerno system consists out of the following components:

- Central unit (Art. 71.98.0320)
  - D-Cerno CU
  - D-Cerno PS
  - Mains cable
  - Conference system cable (2m)
  - Quick guide
- Delegate unit (Art. 71.98.0301)
  - D-Cerno D
  - Conference system cable (2m)
- Chairman unit (Art. 71.98.0302)
  - D-Cerno C
  - Conference system cable (2m)
- Spare power supply (Art. 71.98.0340)
  - D-Cerno PS
  - Mains cable
- System cables, available in different lengths (see chapter System cables)

Detailed info about the different components can be found in Section 2 of this manual.

5.2. Network structure

The central unit can control and power a total of 50 units over the four available conference ports.

The network can be structured in two way:

- Branch configuration
- Closed loop configuration

Each branch, loop can handle a maximum of 25 units if the total cable length is respected.

The total cable length of a branch / loop cannot exceed the maximum of 400 m.

The max cable length between units or between units and central unit is 80 m.

The maximum power consumption of a unit is 2W.

Below a graphical representation of a D-Cerno configuration.

At the left side a branch configuration connected to port 1.
At the right a closed loop configuration between port 3 and 4.

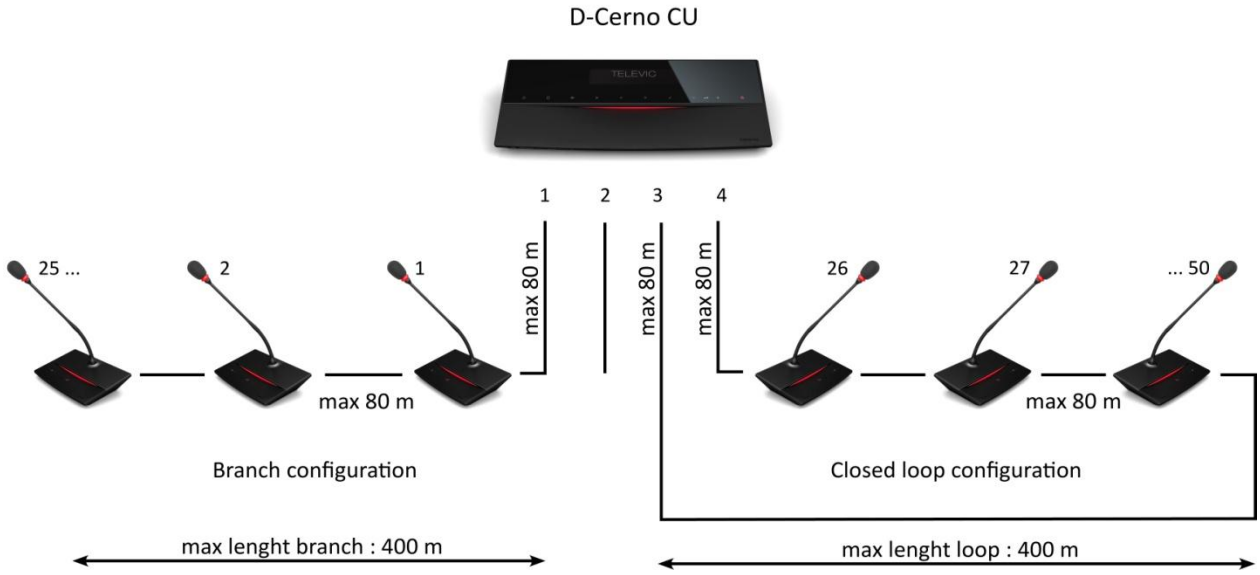


Figure 5.1 : D-Cerno network

Designing a system in a closed loop configuration provides a redundant system and thus increases the reliability of the system.

If for some reason a cable or unit gets defective the system stays operational.

The units have the possibility to detect the flow of the signal automatically providing a free port selection. If at some point no signal is provided anymore, automatically the signal flow will be reversed. As a result the system configuration stays operational.

The figures below illustrates:

- Branch configuration in normal operation
- Branch configuration with cabling error
- Loop configuration with cabling error

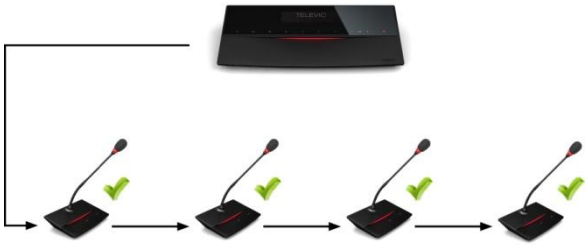


Figure 5.2 : D-Cerno branch configuration, no error

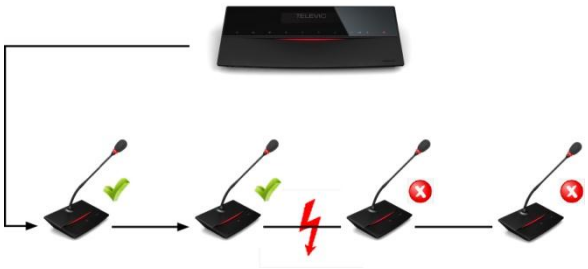


Figure 5.3 : D-Cerno branch configuration, cable error

Figure 5.4 : D-Cerno loop configuration, cable error

Section 2 – System Components

6. Table Top Delegate units

6.1. Introduction

The contribution units consist out of delegate and chairman units. Both are used for speech reinforcement in a conference room. The chairman units are used to guide and control an ongoing discussion.

6.2. Controls and indicators

The D-Cerno delegate units have the following features:

1. **Microphone touch sensor button**:
   Activation/deactivation of the microphone. Indication LEDs show the status of the microphone. (red : active, green : request)
2. **Loudspeaker**:
   Distributes the floor channel. Mutes in case microphone is active.
3. **Headphone connector:**
   Connection of headphone to the unit. Mono- and stereo headphones can be used.
4. **Volume touch sensor buttons:**
   Change the volume level of the headphones.

   Remark : volume change is only possible when a headphone is connected
5. **Microphone**
6. **Led bar**

   Indicates the status of the unit.
   Red : unit is active
   Green : unit is in request mode
   Pressing the Next-in-line or PRIOR button on a chairman unit is indicated by illuminating the corresponding part of the led bar.
7. **NEXT button: (chairman unit only)**
   Grants the floor to the next delegate in the waiting list.
8. **PRIOR button: (chairman unit only)**
   permanently deactivates the microphone of all active units.

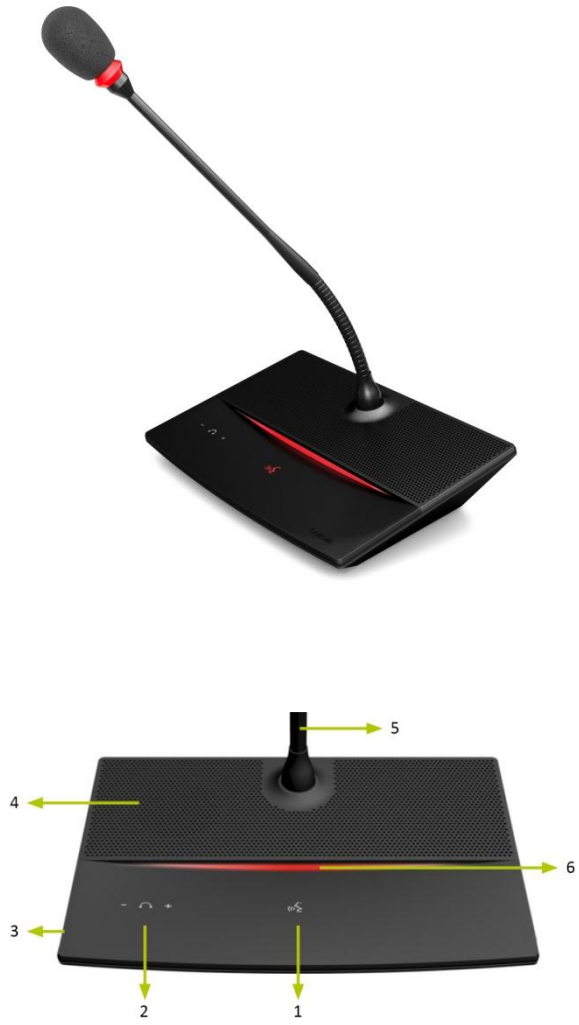


Figure 6.2.1: D-Cerno Discussion Unit

Figure 6.2.2: D-Cerno Chairman Unit

6.3. Installation

D-Cerno units offer free input/output connectivity to allow flexible cabling.

The delegate units can be connected as a daisy chain branch or in loop to ensure redundancy and increase reliability.

Figure 6.3: D-Cerno connectivity

Make sure that the units are not positioned too close to each other. It is recommended to keep a distance of 1m between the units to prevent howling.

The recommended speaking distance for people to speak to the microphone is between 20 to 40 cm.

6.4. Microphones

6.4.1. Introduction

The D-Cerno microphone has a uni-directional response for optimum performance even in noisy conditions, and has a very low susceptibility to interference from mobile phones.

6.4.2. Electrical and acoustic properties

Table 6.4.2: Microphone characteristics

Transducer type	Back electret (condenser)
Operating principle	Pressure gradient
Polar pattern	Uni-directional, cardioid
Frequency response	130 Hz – 150000 Hz
Nominal impedance	1kOhm (at 1 kHz, drop resistance = 1k2, Vdd = 3.3VDC)
Load impedance	> 5kOhm
Max.SPL at 1 kHz	120 dB SPL
Free field sensitivity	7mV/Pa, +/- 3 dB at 1 kHz or (-43dB, 0dB=1V/Pa at 1kHz)
Power supply	3.3V DC, 0.5 mA
Consumption	0.5 mA (without LED ring); max. 25 mA (with illuminated ring)

6.5. Maintenance

6.5.1. General

Caution:
Do not put any objects on top of the units. Object falling through the holes of the unit can cause damage.

Caution:
Do not install the units in a location near heat sources as radiators, air ducts or direct sunlight.

Caution:
Make sure the units are not exposed to excessive dust, humidity, mechanical vibration or shock.

6.5.2. Cleaning

Caution:
Do not use alcohol, ammonia or petroleum solvents or abrasive cleaners to clean the units.

To keep its original condition it is advised to periodically clean the unit:

- Use a clean soft cloth that is not fully moist.
- Make sure the device is completely dry before usage.

7. Central Control unit

7.1. Introduction

The D-Cerno CU is the heart of the system. It controls all delegate units and can interconnect to other systems via the external audio connections.

The system operates in a standalone mode and controls a maximum of 50 units. Configuration can be done via the integrated menu.

Figure 7.1 : D-Cerno connectivity

7.2. Controls and indicators

All controls are done via touch panel by means of an intuitive user interface menu (see chapter 11)

A user can activate or select a control or menu item by touching one of the symbols underneath the display.

7.3. External Connections

1. +48V DC power connector

Figure 7.2 : DC power connector

2. 4 x RJ45 ports to connect up to max 50 delegate units. (max. 25 units per branch or loop)

Figure 7.3 : System ports

The green indicator points to detected signal, without errors (devices detected).
The yellow indicator points to error or no signal detected (no devices connected)

3. 2 x RJ45 ports

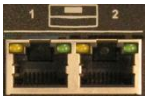


Figure 7.4 : Master – Slave ports

Reserved for master – slave connection (not yet implemented)

4. LAN connector

Figure 7.5 : LAN connector

Webserver connection (D-Cerno CU-R only)

5. Two unbalanced RCA audio output connectors to extract analog audio floor signal

Figure 7.6 : Aux Out

The green indicators light up when there is an output signal > -40dBV present

6. One unbalanced RCA analog audio input connector to add external signal to the floor

Figure 7.7 : Aux in

The red indicators light up when there is an overload of the input signal (signal > +9dBV)

7. One balanced XLR analog audio connector to add external signal to the floor

   The red indicators light up when there is an overload of the input signal.

   The AUX In connections on the central unit have a XLR 3 Female connector. So a cable with XLR 3 Male connector should be used to insert an external signal.

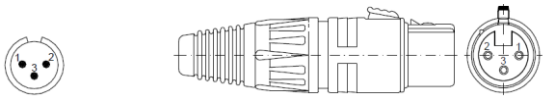


Figure 7.8 : XLR pin assignment

Pin 1	Shield
Pin 2	Signal +
Pin 3	Signal -

8. Headphone connector

   Headphone monitoring.

In case additional cables are required Televic has standard pre-made cables available in different lengths.

8. Power Supply

The power supply can operate on an input voltage range of 100-240Vac , 47-63Hz.
The output voltage is 48V dc – 3.15A max

9. System cables

Cables used in the D-Cerno system are Cat5e (AWG 24 FTP) cables with RJ45 connectors.

Contribution units and central units are standard delivered with a premade cable of 2m.

Section 3 – Configuring the system

10. Menu Navigation

After start-up of the system, the main menu shows up.

The main menu consists of a system volume section and a configuration menu entrance.

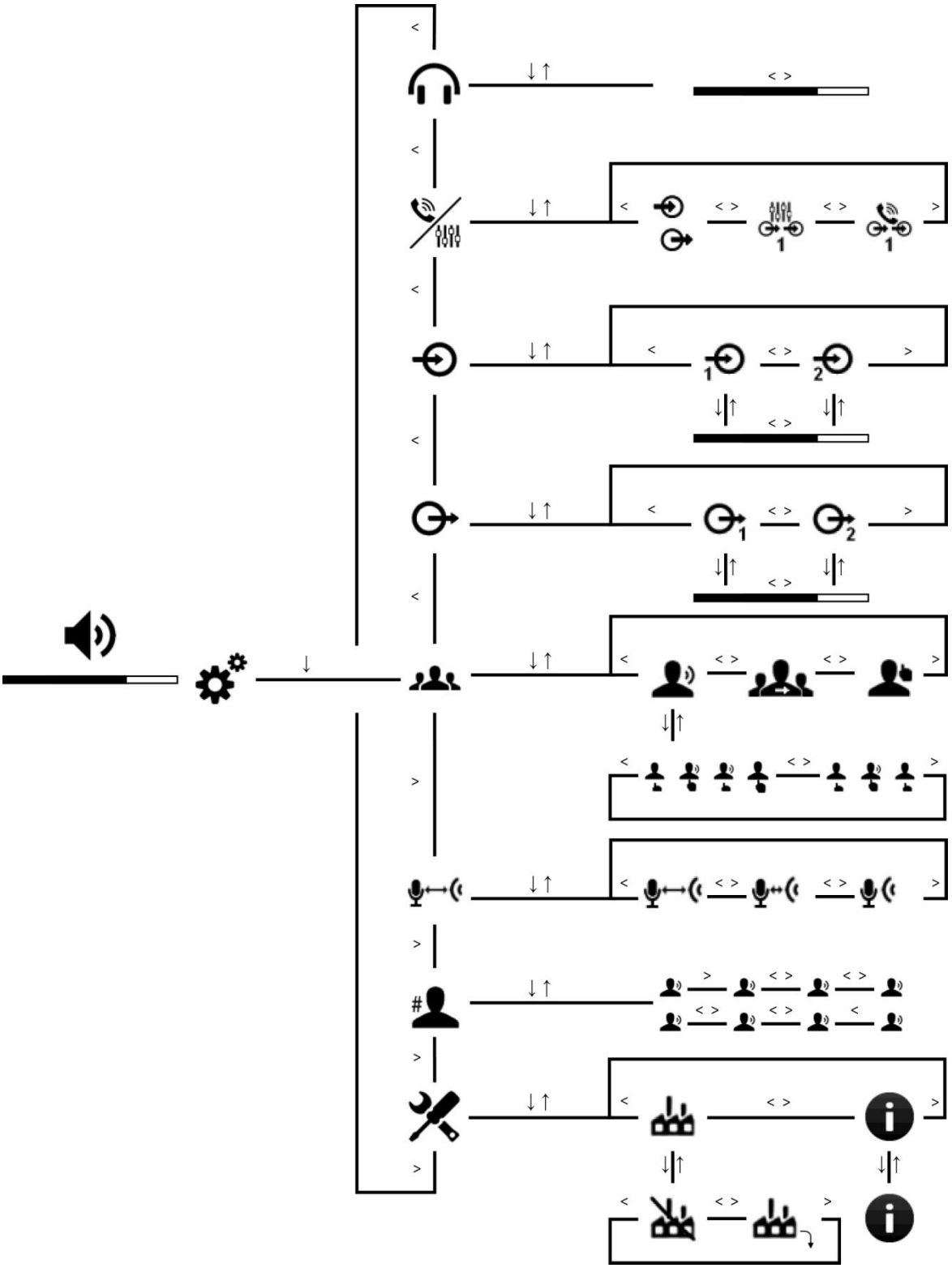
The main system volume can be adapted with the < > keys or via the dedicated volume buttons.

The menu consists out of several levels. Each level functions as a ring structure navigating from the last to first item or vice versa.

	Enter the configuration menu
v	Enter the next menu level
^	Return to previous menu level
<	Select previous menu item
>	Select next menu item
	Highlight of selected item

11. Menu overview

The menu structure on the next pages can be used as a quick reference guide to configure the conference systems.



Level			Description
L1	L2	L3	
			Microphone mode
			Direct Speak
			Toggle
			Push to talk
			Override
			Request
			Microphone sensitivity preset
			Preset Far
			Preset Average
			Preset Close
			Number of active speakers allowed
			Representation of speaker, maximum 8
			Settings menu
			Factory settings
			Factory settings OFF
			Activate factory settings
			System information
			Information about software and hardware versions of the central unit
			Auxiliary OUT settings
			Aux OUT 1
			Aux OUT 1 volume adjustment
			Aux OUT 2
			Aux OUT 2 volume adjustment

	Auxiliary IN settings
	Aux IN 1
	Aux IN 1 volume adjustment
	Aux IN 2
	Aux IN 2 volume adjustment
	External processing
	Independent aux settings
	External Processing
	Remote Conferencing
	Headphone volume
	Volume adjustment menu

Section 4 – The Menu explained

12. Main Menu

Config menu selection allows entering the different settings as described below

All selected settings are activated immediately except for “restore factory settings” which needs additional confirmation.

12.1. Headphone volume

Adjust the headphone volume of the CU

Headphone output gain adjustable between 0dB and -72dB + “OFF”

12.2. Conference modes

In order to guide a conference several conference modes are available.

Chairman microphones are not affected by any conference mode and can be activated at any time with a maximum of 8 chairman units.

12.2.1. Direct Access

Enables the participant to turn on his microphone at any time by pressing the MIC icon on his conference unit.

Several participants can be active simultaneously until the microphone limit setting (see chapter 12.3) is reached.

The chairman can cancel all the active microphones by short pressing the PRIOR icon.

Holding the PRIOR button will temporarily mute all active microphones. Releasing the button will return the state of the microphone before the PRIOR button was pressed.

12.2.2. Activation mode

In the direct access mode there is an additional setting to define the way a delegate is granted the floor.

Toggle

Represented by animation sequence

The microphone icon needs to be pressed to activate the unit and once more to deactivate the unit.

Push to talk

Represented by animation sequence

The microphone is only active as long as the MIC icon is pressed.

12.2.3. Override (1-8)

Makes it possible to activate 1 to 8 delegates simultaneously depending on microphone limit setting (see chapter 12.3)

Whenever the microphone limit is reached, and a delegate presses the microphone icon, the longest active microphone will be deactivated.

The chairman can cancel all the active microphones by short pressing the PRIOR icon.

Holding the PRIOR button will temporarily mute all active microphones. Releasing the button will return the state of the microphone before the PRIOR button was pressed.

12.2.4. With request

Pressing the MIC icon will add the delegate in a waiting list. The unit will enter into request state.

A unit in request is visualized via the green light bar on the delegate unit and by blinking the microphone led ring.

The chairman can activate delegate unit(s) that are in request state by pressing the NEXT icon on his unit until the microphone limit is reached.

The light bar of first delegate unit in the queue list will become red and the microphone will be activated.

The chairman can cancel all the active microphones by short pressing the PRIOR icon.

Holding the PRIOR button will temporarily mute all active microphones. Releasing the PRIOR button will return the status of the microphones as before the PRIOR button was pressed.

12.3. Microphone Limit

The maximum open microphones at the same time can be chosen between 1 and 8.

The value of this menu item is represented by a number of delegate icons.
e.g. 4 open microphones

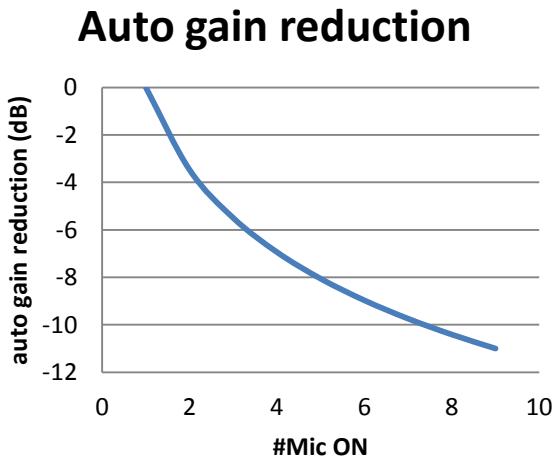
On top of the maximum number of active delegates it is possible to activate a maximum of 8 chairman units.

12.4. Microphone preset

There are 3 limiter gain presets to choose from. The choice between these 3 will depend on the distance between the speaker and the microphone.

This setting influences the sensitivity and the dynamic range of the microphones.

There is also a fixed automatic gain reduction setting that reduces the volume per active microphone depending on the total number of active microphones. See graph below:



12.5. Audio out

The D-Cerno CU has 2 auxiliary output RCA connectors.

On each output there is also an activity indication. (led is on when level > -40dBV)

The output gain is adjustable between +24dB and -51dB + “OFF”
Default gain value = 0dB
10dBV (=0dBFS)

12.6. Audio In

Two auxiliary line inputs are available on the central unit.

Aux IN1 : RCA connector
Aux IN2 : XLR connector

On each input there is also an overload led indication. (led is on when input level > 9dBV)

The input gain is adjustable between +24dB and -51dB + “OFF”
Default gain value = 0dB
10dBV (=0dBFS)

12.7. External processing

12.7.1. Independent aux settings

Auxiliary input and output settings are independent form each other and allow external signal to be added to the floor and to extract the total floor signal

Audio path for Independent Aux settings

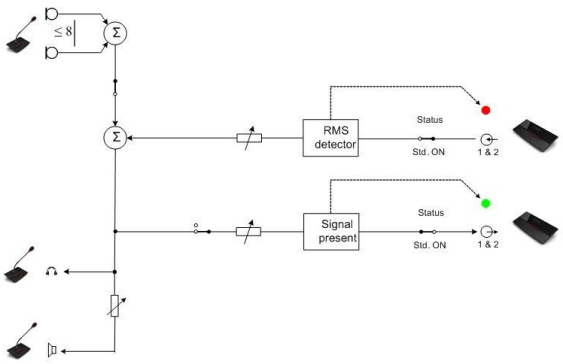


Figure 12.1 : Normal audio path

12.7.2. Remote Conferencing

Remote conferencing option gives the possibility to connect a central unit to e.g. a video conferencing system or telephone coupler. To prevent echoing, the remote conferencing option needs to be set.

Note:
When selecting “Remote conferencing” , Aux volume settings are set to default values !

So Aux input – output levels have to be set to desired values AFTER selecting “Remote conferencing”

Audio path for N_1

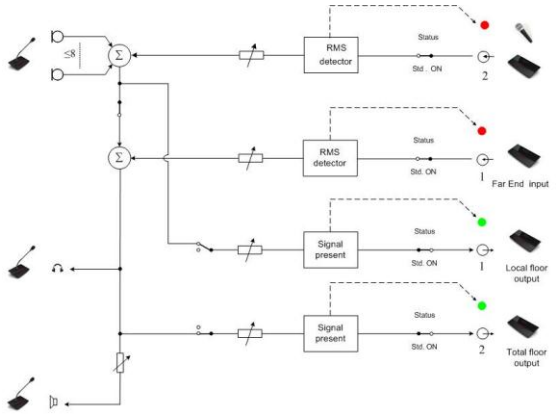


Figure 12.2 : Remote conferencing audio path

Audio path for external equalizer Mode

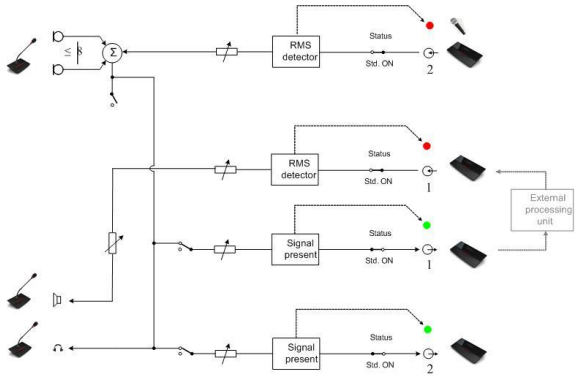


Figure 12.3 : External equalizer audio path

12.7.3. External Equalizer

To avoid feedback or to equalize audio signals it is possible to connect external equipment to the central unit. When this setting is chosen, the floor signal (mics + Aux IN2) will be routed to both AUX OUT. The signal present at AUX IN1 will be used as the new floor channel and audible on the units loudspeakers. This way it is possible to use external audio equipment like equalizers, feedback destroyers or mixers. The schematic below summarizes this feature.

The signal at both AUX OUT will be the sum of the microphones and the AUX IN2.

Note:
"Remote conferencing" and "External Equalizer" audio paths apply only to Aux In 1 and Aux Out 1.

In "remote conferencing" setup mode, Aux Out 1 is considered as "local floor" out and Aux Out 2 is considered as "total floor" out.

Aux Input 1 is used as "Far End input", so this signal will not be part of the Aux Out 1 signal.

Aux Input 2 (XLR) can also be used to add a signal (e.g. from external microphones) to the local floor

Note:
When selecting "External equalizer" , Aux volume settings are set to default values !

So Aux input – output levels have to be set to desired values AFTER selecting "External Equalizer"

12.8. Settings menu

12.8.1. Factory settings

When the factory settings reset is selected and confirmed, the CU will reboot with its default settings. (see chapter 13)

12.8.2. System info

Displays general system info as shown in example below

Serial number and software version

SN	**10552685**
V	**v 010C**

Section 5 – Appendix

13. Default Settings

Menu Item	Default Value	
Operating Mode		Direct Access
Activation mode		Toggle
Microphone preset		Far (Maximum sensitivity)
Maximum number of open microphones		4
Loudspeaker Volume	-6dBFS	
Headphone Volume	-6dBFS	
Output level Aux Out 1	-10 dBFS	
Output level Aux Out 2	-10 dBFS	
Input level Aux In 1	OFF	
Input level Aux In 2	OFF	
Aux-In/Out Mode		Independent

14. Technical Data

14.1. Electrical and Electro Acoustical Characteristics

Frequency response	25Hz to 15KHz (+/-3dB)
Harmonic distortion	≤ 0.02%
Input sensitivity	0dBV= -10dBFS
Input gain adjustment	+24dB to -51dB + “OFF”
Input impedance Aux 1	≥ 7 KΩ (asymm.)
Input impedance Aux2	≥ 20 KΩ (symm.)
Output level	0dBV= -10dBFS
Output gain adjustment	+24dB to -51dB + “OFF”
Output impedance	≤ 600 Ω
Volume control	0dB to -46dB + “OFF”
Headphone output level	Max 70mW in 32 Ω
Headphone volume control	0dB to -72dB + “OFF”
Headphone impedance =	16 Ω to 150 Ω

14.2. Mechanical Characteristics

Dimentions W x H x D (mm)

Central unit:	300 x 135 x 50
Including Packing :	345 x 250 x 155
Delegate / Chairman unit:	210 x135 x 50
Including Packing:	335 x 250 x 120
Power supply:	170 x 70 x 35
Including Packing:	215 x 160 x 50

Weight (g)

Central unit:	1300
Incuding packing (CU + PS + Cable)	2660
Delegate / Chairman unit:	660
Incuding packing (unit + cable)	1100
Power supply:	920

14.3. Environmental Characteristics

Temperature	5°C to 50°C
Humidity	Protection class EP10 Compliant to IEC 60068_2.14

14.4. System limits

Max units on CU	50
Max units on one port	25
Maximum cable length (branch or loop)	400 m
Maximum cable length between units or between CU and first unit	80m

For more information visit:
www.televic-conference.com

Data subject to change without notice